

WHAT IS CLAIMED IS:

- 1 1. A chemical vapor deposition system comprising:
2 a housing that defines an enclosed deposition chamber and includes
3 a lower portion and an upper portion having a horizontal junction with each other;
4 a seal assembly that extends between the lower and upper housing
5 portions at their horizontal junction;
6 a roll conveyor located within the deposition chamber to convey glass
7 sheet substrates along a direction of conveyance at a plane of conveyance below the
8 horizontal junction of the lower and upper housing portions where the seal assembly
9 is located;
10 a chemical vapor distributor located within the deposition chamber
11 above the roll conveyor to provide chemical vapor deposition of a coating on the
12 conveyed glass sheet substrates;
13 the housing including an entry through which the glass sheet
14 substrates to be coated are introduced into the deposition chamber at a location
15 below the horizontal junction of the lower and upper housing portions where the
16 seal assembly is located; and
17 the housing including an exit through which the coated glass sheet
18 substrates leave the deposition chamber at a location below the horizontal junction
19 of the lower and upper housing portions where the seal assembly is located.
- 1 2. A chemical vapor deposition system as in claim 1 further
2 including a vacuum source for drawing a vacuum within the deposition chamber,
3 the seal assembly between the lower and upper housing portions including inner and
4 outer seal members spaced from each other to define an intermediate seal space that
5 is located between the deposition chamber and the ambient and in which a vacuum
6 is drawn to a lesser extent than in the deposition chamber, and a sensor for detecting
7 the pressure within the seal space to sense leakage of either the inner seal member
8 or the outer seal member.

1 3. A chemical vapor deposition system as in claim 2 wherein the
2 seal assembly includes lower and upper seal flanges on the lower and upper housing
3 portions, the inner and outer seal members extending between the lower and upper
4 seal flanges to seal between the lower and upper housings, and clamps that extend
5 between the lower and upper seal flanges to secure the upper housing portion to the
6 lower housing portion.

1 4. A chemical vapor deposition system as in claim 3 wherein
2 each clamp includes a hydraulic cylinder that provides the securement between the
3 lower and upper seal flanges.

1 5. A chemical vapor deposition system as in claim 1 including
2 an oven located within the housing and having elongated heaters that extend along
3 the direction of conveyance in laterally spaced banks to heat the conveyed glass
4 sheet substrates and control temperature differentials of the substrates laterally with
5 respect to the direction of conveyance.

1 6. A chemical vapor deposition system as in claim 5 wherein
2 each elongated heater includes an electric resistance element through which
3 electricity is passed to provide heating and each heater including an elongated quartz
4 tube through which the electric resistance element extends.

1 7. A chemical vapor deposition system as in claim 5 wherein the
2 roll conveyor includes rolls that extent through the oven and have ends projecting
3 outwardly therefrom within the housing, and a drive mechanism that rotatively
4 drives the roll ends outwardly of the oven within the housing.

1 8. A chemical vapor deposition system as in claim 7 further
2 including a screen that is located below the roll conveyor to catch any broken glass
3 sheet substrates.

1 9. A chemical vapor deposition system 6 wherein the screen is
2 made of stainless steel and includes stiffeners.

- 1 10. A chemical vapor deposition system comprising:
2 a housing that defines an enclosed deposition chamber and includes
3 a lower portion and an upper portion having a horizontal junction with each other,
4 and the lower and upper housing portions respectively having lower and upper seal
5 flanges at the horizontal junction of the lower and upper housing portions;
6 a vacuum source for drawing a vacuum within the deposition
7 chamber;
8 a seal assembly having inner and outer seal members that extend
9 between the lower and upper seal flanges of the lower and upper housing portions
10 at their horizontal junction to seal therebetween, and the inner and outer seal
11 members being in spaced from each other to define an intermediate seal space in
12 which a vacuum is drawn between the deposition chamber and the ambient;
13 a sensor for detecting the pressure within the seal space to sense
14 leakage of either the inner seal member or the outer seal member;
15 a roll conveyor located within the deposition chamber to convey glass
16 sheet substrates along a direction of conveyance at a plane of conveyance below the
17 horizontal junction of the lower and upper housing portions where the seal assembly
18 is located;
19 a chemical vapor distributor located within the deposition chamber
20 above the roll conveyor to provide chemical vapor deposition of a coating on the
21 conveyed glass sheet substrates;
22 the housing including an entry through which the glass sheet
23 substrates to be coated are introduced into the deposition chamber at a location
24 below the horizontal junction of the lower and upper housing portions where the
25 seal assembly is located; and
26 the housing including an exit through which the coated glass sheet
27 substrates leave the deposition chamber at a location below the horizontal junction
28 of the lower and upper housing portions where the seal assembly is located.

- 1 11. A chemical vapor deposition system comprising:
2 a housing that defines an enclosed deposition chamber and includes
3 a lower portion and an upper portion having a horizontal junction with each other,

4 and the lower and upper housing portions respectively having lower and upper seal
5 flanges at the horizontal junction of the lower and upper housing portions;

6 a vacuum source for drawing a vacuum within the deposition
7 chamber;

8 a seal assembly having inner and outer seal members that extend
9 between the lower and upper seal flanges of the lower and upper housing portions
10 at their horizontal junction to seal therebetween, and the inner and outer seal
11 members being in spaced from each other to define an intermediate seal space in
12 which a vacuum is drawn between the deposition chamber and the ambient;

13 a sensor for detecting the pressure within the seal space to sense
14 leakage of either the inner seal member or the outer seal member;

15 a roll conveyor located within the deposition chamber and having
16 rolls for conveying glass sheet substrates along a direction of conveyance at a plane
17 of conveyance below the horizontal junction of the lower and upper housing
18 portions where the seal assembly is located;

19 an oven located within the housing with the roll conveyor conveying
20 the glass sheet substrates therethrough, the oven having elongated heaters that
21 extend along the direction of conveyance in laterally spaced banks to heat the
22 conveyed glass sheet substrates and control temperature differentials of the
23 substrates laterally with respect to the direction of conveyance, and each elongated
24 heater including an electric resistance element through which electricity is passed
25 to provide heating and each heater including an elongated quartz tube through which
26 the electric resistance element extends;

27 a chemical vapor distributor located within the deposition chamber
28 above the roll conveyor to provide chemical vapor deposition of a coating on the
29 conveyed glass sheet substrates;

30 the housing including an entry through which the glass sheet
31 substrates to be coated are introduced into the deposition chamber at a location
32 below the horizontal junction of the lower and upper housing portions where the
33 seal assembly is located; and

34 the housing including an exit through which the coated glass sheet
35 substrates leave the deposition chamber at a location below the horizontal junction
36 of the lower and upper housing portions where the seal assembly is located.

1 12. A chemical vapor deposition system comprising:
2 a housing that defines an enclosed deposition chamber and includes
3 a lower portion and an upper portion having a horizontal junction with each other,
4 and the lower and upper housing portions respectively having lower and upper seal
5 flanges at the horizontal junction of the lower and upper housing portions;
6 a vacuum source for drawing a vacuum within the deposition
7 chamber;
8 a seal assembly having inner and outer seal members that extend
9 between the lower and upper seal flanges of the lower and upper housing portions
10 at their horizontal junction to seal therebetween, and the inner and outer seal
11 members being in spaced from each other to define an intermediate seal space in
12 which a vacuum is drawn between the deposition chamber and the ambient;
13 clamps that each include a hydraulic cylinder for securing the lower
14 and upper seal flanges to each other;
15 a sensor for detecting the pressure within the seal space to sense
16 leakage of either the inner seal member or the outer seal member;
17 a roll conveyor located within the deposition chamber and having
18 rolls for conveying glass sheet substrates along a direction of conveyance at a plane
19 of conveyance below the horizontal junction of the lower and upper housing
20 portions where the seal assembly is located;
21 a screen located below the roll conveyor to catch any broken glass
22 sheet substrates;
23 an oven located within the housing with the roll conveyor conveying
24 the glass sheet substrates therethrough, the oven having elongated heaters that
25 extend along the direction of conveyance in laterally spaced banks to heat the
26 conveyed glass sheet substrates and control temperature differentials of the
27 substrates laterally with respect to the direction of conveyance, and each elongated
28 heater including an electric resistance element through which electricity is passed
29 to provide heating and each heater including an elongated quartz tube through which
30 the electric resistance element extends;

31 a chemical vapor distributor located within the deposition chamber
32 above the roll conveyor to provide chemical vapor deposition of a coating on the
33 conveyed glass sheet substrates;

34 the housing including an entry through which the glass sheet
35 substrates to be coated are introduced into the deposition chamber at a location
36 below the horizontal junction of the lower and upper housing portions where the
37 seal assembly is located; and

38 the housing including an exit through which the coated glass sheet
39 substrates leave the deposition chamber at a location below the horizontal junction
40 of the lower and upper housing portions where the seal assembly is located.

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